

F-7271

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant : Hiroshi CHIHARA et al.  
Serial No. : Not yet known  
Filed : Concurrently herewith  
For : METAL SURFACE-TREATING METHOD

Assistant Commissioner for Patents  
Washington, D.C. 20231

**PRELIMINARY AMENDMENT**

Sir:

Preliminary to examination, please amend the above-identified patent application as follows:

**IN THE CLAIMS:**

Amend claims 1, 4 and 5 as follows, the amendments being shown by brackets and underscoring in the Appendix hereto.

1. (Amended) A metal surface-treating method  
which comprises a chemical conversion step of dipping a substrate in an  
acidic aqueous zinc phosphate solution,  
and using an aqueous zinc nitrite solution as an accelerator,  
said aqueous zinc nitrite solution being substantially free of calcium ion and  
containing 0 to 6500 ppm of sodium ion and 0 to 20 ppm of sulfate ion in case of  
assuming the concentration of zinc nitrite therein to be 10 weight % as NO<sub>2</sub>.

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4. (Amended) The metal surface-treating method according to Claim 1 or

2

wherein the acidic aqueous zinc phosphate solution contains 3 to 30 g/L of nitrate ion.

5. (Amended) The metal surface-treating method according to Claims 1 or

2

wherein the substrate is a shaped product having an iron type surface and a zinc type surface or one having an iron type surface, a zinc type surface and an aluminum type surface.

**IN THE ABSTRACT:**

Delete the original Abstract and substitute therefor the abstract appended hereto on a separate sheet.

## ABSTRACT

The present invention is to provide a metal surface-treating method which is capable of forming a zinc phosphate coat suitable for the cationic electrodeposition coating of a metallic shaped product, particularly a metallic shaped product having both an iron type metallic surface and a zinc type metallic surface and is suited to a closed system. A metal surface-treating method which comprises a chemical conversion step of dipping a substrate in an acidic aqueous zinc phosphate solution, and using an aqueous zinc nitrite solution as an accelerator, said aqueous zinc nitrite solution being substantially free of calcium ion and containing 0 to 6500 ppm of sodium ion and 0 to 20 ppm of sulfate ion in case of assuming the concentration of zinc nitrite to be 10 weight % as  $\text{NO}_2$ .

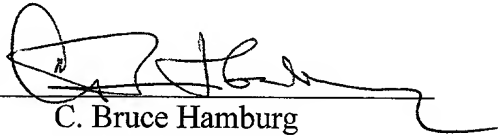
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**REMARKS**

The claims are amended to remove improper multiple dependencies (multiple dependent depending directly or indirectly from multiple dependent) and the occurrence of brackets.

Respectfully submitted,

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## APPENDIX I

### AMENDED CLAIMS WITH AMENDMENTS INDICATED THEREIN BY BRACKETS AND UNDERLINING

1. (Amended) A metal surface-treating method

which comprises a chemical conversion step of dipping a substrate in an acidic aqueous zinc phosphate solution,

and using an aqueous zinc nitrite solution as an accelerator,

said aqueous zinc nitrite solution being substantially free of calcium ion and containing 0 to 6500 ppm of sodium ion and 0 to 20 ppm of sulfate ion in case of assuming the concentration of zinc nitrite  $[[\text{Zn}(\text{NO}_2)_2]]$  therein to be 10 weight % as  $\text{NO}_2$ .

4. (Amended) The metal surface-treating method according to Claim 1[,]  
or 2[or 3]

wherein the acidic aqueous zinc phosphate solution contains 3 to 30 g/L of nitrate ion.

5. (Amended) The metal surface-treating method according to Claims 1[,]  
or 2[, 3 or 4]

wherein the substrate is a shaped product having an iron type surface and a zinc type surface or one having an iron type surface, a zinc type surface and an aluminum type surface.